

**DRUG DELIVERY APPARATUS AND METHOD  
FOR DELIVERING A THERAPEUTIC SUBSTANCE**

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**ABSTRACT**

10 An apparatus and associated method for delivering a therapeutic substance  
to a vascular lumen, using an implantable prosthesis, such as a stent, which has  
grooves or trenches formed thereon. The grooves are formed on specific regions  
of the stent struts to increase the flexibility of the stent. The grooves also provide a  
therapeutic material carrying capability for treating intravascular ailments, such as  
15 instant restenosis and thrombosis. The therapeutic material loading of the grooves  
can be accomplished in several ways. For example, a pure therapeutic material or  
a pre-mixed material with a polymer solution, which enhances the adhesion  
properties of the material, may be deposited directly in to the grooves using  
conventional spray or modified dip techniques. In another example, a  
20 microextruded monofilament therapeutic material can be wound about the stent,  
such that the monofilament becomes embedded in the grooves.